

whether they may not rather be ascribed to the older Pliocene epoch is a question which farther inquiries and comparisons must determine.

Whatever be their date in the tertiary series, they are quadrupeds which inhabited the country when the formations 5 and 5 c originated. Probably they were drowned during floods, such as rush down the flanks of volcanos during eruptions, when great bodies of steam are emitted from the crater, or when, as we have seen, both on Etna and in Iceland in modern times, large masses of snow are suddenly melted by lava, causing a deluge of water to bear down fragments of igneous rocks mixed with mud, to the valleys and plains below.

It will be seen that the valley of the Issoire, down which these ancient inundations swept, was first excavated at the expense of the formations 2, 3, and 4, and then filled up by the masses 5 and 5 c, after which it was re-excavated before the more modern alluviums (Nos. 6 and 7) were formed. In these again other fossil mammalia of distinct species have been detected by M. Bravard, the bones of an hippopotamus having been found among the rest.

At length, when the valley of the Allier was eroded at Issoire down to its lowest level, a talus of angular fragments of basalt and freshwater limestone (No. 8) was formed, called the bone-bed of the Tour de Boulade, from which a great many other mammalia have been collected by MM. Bravard and Pomel. In this assemblage the *Elephas primigenius*, *Rhinoceros tichorinus*, *Deer* (including rein-deer), *Equus*, *Bos*, *Antelope*, *Felis*, and *Canis*, were included. Even this deposit seems hardly to be the newest in the neighbourhood, for if we cross from the town of Issoire (see fig. 676) over Mont Perrier to the adjoining valley of the Couze, we find another bone-bed (No. 9), overlaid by a current of lava (No. 10).

The history of this lava-current, which terminates a few hundred yards below the point No. 10, in the suburbs of the village of Nèchers, is interesting. It forms a long narrow stripe more than 13 miles in length, at the bottom of the valley of the Couze, which flows out of a lake at the foot of Mont Dor. This lake is caused by a barrier thrown across the ancient channel of the Couze, consisting partly of the volcanic cone called the Puy de Tartaret, formed of loose scoriæ, from the base of which has issued the lava-current before mentioned. The materials of the dam which blocked up the river, and caused the Lac de Chambon, are also, in part, derived from a land-slip which may have happened at the time of the great eruption which formed the cone.

This cone of Tartaret affords an impressive monument of the very different dates at which the igneous eruptions of Auvergne have happened; for it was evidently thrown up at the bottom of the existing valley, which is bounded by lofty precipices composed of sheets of ancient columnar trachyte and basalt, which once flowed at very high levels from Mont Dor.\*

\* For a view of Puy de Tartaret and Mont Dor, see Scrope's Volcanos of Central France.